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Job No.: CTCE/BBMP/W.No.02/HSN/CUBE/2014-15

14.06.2014

TEST REPORT ON CONCRETE CUBES

Client	: **Asst. Executive Engineer**, Yelahanka Sub Division, BBMP, Bangalore.
Agency	: **Mr. H.S. Nataraj**, Contractor, Bangalore.
Name of the work	: Providing asphalting to Besthara Bheedhi main road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	: BBMP/AEE/YSD/PR/316/2014-15 Dated: 05.05.2014
Sample ID	: RCC Drain Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{25}
Compressive Strength as on	: 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	17.05.2014	14.06.2014	8.158	478.9	21.28
2	17.05.2014	14.06.2014	8.237	490.4	21.80
3	17.05.2014	14.06.2014	8.346	508.7	22.61

Note:

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Job No: CTCE/BBMP/W.No.02/HSN/CUBE/2014-15

16.06.2014

TEST REPORT ON CONCRETE CUBES

Client	: **Asst. Executive Engineer**, Yelahanka Sub Division, BBMP, Bangalore.
Agency	: **Mr. H.S. Nataraj**, Contractor, Bangalore.
Name of the work	: Providing asphalting to Beerhara Bheedhi main road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	: BBMP/AEE/YSD/PR/346/2014-15 Dated: 05.05.2014
Sample ID	: RCC Drain Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{25}
Compressive Strength as on	: 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	19.05.2014	16.06.2014	8.356	493.4	21.93
2	19.05.2014	16.06.2014	8.412	511.9	22.75
3	19.05.2014	16.06.2014	8.287	479.2	21.30

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Basaveshwarinagar,
Bangalore-560079.

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagar, Bangalore-79.
Tele Fax : 23223227, Website : www.civiltechconsultants.com
E-mail : vishwanath.ja@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.: CTCE/BBMP/W.No.02/HSN/CUBE/2014-15

18.06.2014

TEST REPORT ON CONCRETE CUBES

Client	: Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Agency	: Mr. H.S. Nataraj, Contractor, Bangalore.
Name of the work	: Providing asphalting to Besthara Bheedhi main road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	: BBMP/AEE/YSD/PR/346/2014-15 Dated: 05.05.2014
Sample ID	: RCC Drain Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{20}
Compressive Strength as on	: 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	21.05.2014	18.06.2014	8.145	476.4	21.17
2	21.05.2014	18.06.2014	8.237	490.8	21.81
3	21.05.2014	18.06.2014	8.365	507.5	22.56

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Job No: CTCE/BBMP/W.No.02/YSN/WMM/Gradation/2014-15

09.06.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.

Agency : **Mr. H.S. Nataraj,** Contractor, Bangalore.

Name of Work : Providing asphalting to Beathan Bheedhi main road in Ward No.02 of Yelahanka Sub Division , BBMP, Bangalore.

Reference : BBMP/AEE/YSD/PR/346/2014-15 Dated: 05.05.2014

Date of Testing : 09.06.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): 25295

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	1015	1015	4.0	96.0	95-100
22.4	6425	7440	29.4	70.6	60-80
11.2	6148	13588	53.7	46.3	40-60
4.75	3658	17246	68.2	31.8	25-40
2.36	2964	20210	79.9	20.1	15-30
0.600	2359	22569	89.2	10.8	8-22
0.075	1856	24425	96.6	3.4	0-8

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Bangalore-560079.

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Tele Fax : 23223227, Website : www.civiltechconsultants.com
E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.: CTCE/TBMP/W.No.02/HSN/WMM/AIV/2014-15 09.06.2014

Aggregate Impact Value
IS: 2386 Part IV

Client	**Asst. Executive Engineer**, Yelahanka Sub Division, BBMP, Bangalore.
Agency	**Mr. H.S. Nataraj**, Contractor, Bangalore.
Name of the Work	Providing asphalting to Bestlara Bheedhi main road in Ward No.02 of Yelahanka Sub Division , BBMP, Bangalore.
Reference	BBMP/AEE/YSD/PR/346/2014-15 Dated: 05.05.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	09.06.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	386	389	
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	86	89	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	300	
4	Aggregate Impact value = percent fines	22.28	22.88	
	$100 * (W_2/W_1)$%			22.58

Comments:

— Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No: CTCE/BBMP/W.No.02/HSN/WMM/3-1/2014-15 09.06.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Agency	Mr. H.S. Nataraj, Contractor, Bangalore.
Name of Work	Providing asphalting to Beeltara Dheerlu main road in Ward No.02 of Yelahanka Sub Division , BBMP, Bangalore
Reference	BBMP/AEE/YSD/PR/346/2014-15 Dated: 05.05.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	09.06.2014

Result : Flakiness Index = 11.68%

Elongation Index = 13.42%

Result : Combined Flakiness & Elongation index 25.10%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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Basaveshwaranagar,
Bangalore-560079.

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Tele Fax : 23223227, Website : www.civiltechconsultants.com
E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No: CTCE/BBMP/W No.02/HSN/QB(SDBC)/2014-15 14.06.2014

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

CLIENT	:	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
AGENCY	:	Mr. H.S. Nanraj, Contractor, Bangalore.
NAME OF THE WORK	:	Providing asphalting to Beschara Bheedhi main road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
REFERENCE	:	BBMP/AEE/YSD/PR/346/2014-15 Dated: 05.05.2014
SOURCE OF LOCATION	:	Hot mix Plant, Bangalore
DATE OF TESTING	:	14.06.2014

The results of the tests conducted on the bitumen sample for Semi Dense Bituminous Concrete are as follows:

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 °C, 1/10 mm	IS :1203 -1978 (RA-2009)	65	60 to 70
2	Softening point, °C	IS :1205 -1978 (RA-2009)	48	Min. 45
3	Ductility at 27°C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 50
4	Flash Point, °C	IS :1209 -1978 (RA-2009)	294	Min. 220

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Job No.: CTCE/BBMP/W.No.02/HSN/SDBC/AIV/2014-15 14.06.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Agency	Mr. H.S. Nataraj, Contractor, Bangalore.
Name of the Work	Providing asphalting to Beerhara Bheedhi main road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/YSD/PR/346/2014-15 Dated: 05.05.2014
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	14.06.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	384	387	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	84	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	300	
4	Aggregate Impact value = percent fines $100 * (W_2/W_1)$%	21.88	22.48	22.18

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

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Job No.: CTCE/BBMP/W.No.02/HSN/SDBC/Shape_T/2014-15 : 14.06.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Agency	: Mr. H.S. Nataraj, Contractor, Bangalore.
Name of Work	: Providing asphalting to Beschara Bheedhi main road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	: BBMP/AEE/YSD/PR/346/2014-15 Dated: 05.05.2014
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Semi Dense Bituminous Concrete
Date of Testing	: 14.06.2014

Civil-Tech Consultants & Engineers Bangalore

Result : Flakiness Index = **11.26%**

Elongation Index = **13.54%**

Result: Combined Flakiness & Elongation index **24.80%**

Comments:

Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

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No.: CTCE/BBMP/W.No.02/YSN/SDBC/Sp_Wt/2014-15 16.06.2014

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Agency	Mr. H.S. Nataraj, Contractor, Bangalore.
Name of the Work	Providing asphalting to Besthara Bheedhi main road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/YSD/PR/346/2014-15 Dated: 05.05.2014
Type of Mix	Semi Dense Bituminous Concrete
Source / Location	Hotmix Plant, Bangalore
Date of Testing	16.06.2014

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2030	2029	2031	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_3$ g	1275	1274	1276	
4	Weight of saturated surface dry aggregate in air	W_3 g	2024	2022	2023	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_4)$ g	749	748	747	
6	Weight of oven dried aggregate	W_4 g	2009	2006	2009	
7	Specific Gravity	$W_4/(W_3-W_5)$	2.682	2.682	2.689	2.684
8	Apparent Specific gravity	$W_4/(W_4-W_5)$	2.737	2.740	2.741	2.739
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.75%	0.80%	0.70%	0.75%

Comments:

→ Maximum allowable Aggregate Water absorption value for Semi Dense Bituminous Concrete is 2.0%

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Aggregate Gradation Test

IS : 2386 Part I

Client	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
Agency	Mr. H.S. Nataraj, Contractor, Bangalore.
Name of the Work	Providing asphalting to Besthara Bheedhi main road in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/YSD/PR/346/2014-15 Dated: 05.05.2014
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete (SDBC)
Date of Testing	16.06.2014

Total Weight of Sample: 5300 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	310	5.8	5.85	94.15	90-100	
4.75	2545	48.0	53.87	46.13	35-51	
2.36	847	16.0	69.85	30.15	24-39	
1.18	512	9.7	79.51	20.49	15-30	
0.3	493	9.3	88.81	11.19	9-19	
0.075	358	6.8	95.57	4.43	3-8	

Total Weight of Sample: 5200 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	325	6.3	6.25	93.75	90-100	
4.75	2548	49.0	55.25	44.75	35-51	
2.36	758	14.6	69.83	30.17	24-39	
1.18	525	10.1	79.88	20.12	15-30	
0.3	346	6.7	86.54	13.46	9-19	
0.075	387	7.4	93.98	6.02	3-8	

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